

REMARKS

In response to the Office Action dated March 21, 2007, Applicant respectfully requests reconsideration. Claims 1-25 are pending in the application of which claims 1, 9, 14, and 20 are independent. The Office Action rejected claims 20-25 under 35 U.S.C. § 101, claims 14-25 under 35 U.S.C. § 102, and claims 1-13 under 35 U.S.C. § 103. By this Amendment, Applicant has canceled claims 13, 15, and 21 without prejudice or disclaimer. Applicant has amended claims 1, 4, 6, 9, 11-12, 14, and 20 to further clarify Applicant's invention and to place the claims in a format suitable for allowance. In addition, Applicant has amended the specification at paragraph 0169.

Support for the addition of "wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database" to claims 1, 9, 14, and 20 may be found in the "Summary of the Invention" section and in various portions of Applicant's specification including paragraphs 074 and Fig. 7B. At paragraph 074, the Specification gives an example of T1 and T2 objects defining a mapping of a virtual volume, "For example, T2 striping object 605 reflects the virtual volume object definitions that are striped across multiple ALUs. . . . The T1 partitioning objects 620-650 reflect the virtual volume object definitions that are partitioned among respective ALUs 440-448." In Fig. 7B, for example, T1 and T2 objects (705, 710, 711, 715, 716, 717, 720, 730, 740, and 750) are distributed across the storage processors 410, 420, and 430.

Support for the amendment to the specification at paragraph 0169 can be found in the "Summary of Invention" section of Applicant's specification as filed, which states, at page 4, lines 9-14, that the state manager "...completes short term operations underway at the time the quiescence instruction is received and halts long

term operations underway at the time the quiescence instruction is received.” Accordingly, no new matter has been introduced by the amendments to the claims or to the specification.

Rejections Under 35 U.S.C. § 101

The Office Action rejected claims 20-25 under 35 U.S.C. § 101 stating that the medium is not limited to tangible embodiments. See Office Action at 2. Applicant has amended claim 20 to recite, “a tangibly embodied computer readable medium.” Accordingly, Applicant respectfully requests the rejection under 35 U.S.C. § 101 of claim 20 as well as 22-25, which depend therefrom, to be withdrawn.

Rejections Under 35 U.S.C. § 103

The Office Action rejected claims 1-13 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,790,775 by Marks et al. (“Marks”) in view U.S. Patent No. 5,539,875 (“Bishop”). See Office Action at 3. This rejection of claims 1-13 under 35 U.S.C. § 103 should be withdrawn because a *prima facie* case of obviousness has not been established based on Marks in view of Bishop. To establish a *prima facie* case of obviousness, the prior art (separately or combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006). A *prima facie* case of obviousness has not been established because, among other things, Marks and Bishop, taken alone or in combination, fails to teach or suggest each and every element of claims 1 and 9.

Claim 1

First, neither Bishop nor Marks, alone or in combination, discloses or suggests “halting long term operations underway at the time the quiescence instruction is

received; and completing short term operations comprising operations that are other than long term operations,” as recited in Applicant’s claim 1. Marks, as the Office Action notes, is silent with respect to quiescence instructions, and to make up for this deficiency of Marks, the Office Action cites to Bishop as disclosing this element of Applicant’s claims. See Office Action at 4 and 13-14. However, Bishop merely discloses that when a level quiesces, it initiates no new commands. See Office Action at 14. Applicant is unsure of rationale behind the Office Action’s analogy between Bishop’s “new commands” and Applicant’s “long term operations.” See Office Action at 14. Bishop’s disclosure of initiating no new commands is not analogous Applicant’s halting long term operations “**underway at the time the quiescence instruction is received.**” Bishop does not make any distinction between long term and short term operations. In fact, when Bishop’s system quiesces, **all operations underway are completed** as far as the quiesced level will permit. See Bishop Col. 7, lines 59-64 and Office Action at 14. Since all operations underway are completed in Bishop, it follows that Bishop does not disclose or suggest, “halting long term operations underway at the time the quiescence instruction is received,” as recited in claim 1.

Second, Marks does not disclose or suggest Applicant’s “virtualization database.” Applicant has amended claim 1 to clarify what constitutes the virtualization database, namely, “**objects defining a mapping** from the at least one virtual volume to data in the at least one storage device, wherein **the objects are distributed** across **more than one processor** in the virtualization layer.” Marks merely describes standard, known virtualization of data, in which data is stored in more than one storage device. In the Office Action, Marks at Col 6, lines 1-10 is cited as disclosing a

virtualization layer defining a “mapping from at least one virtual volume to data in the at least one storage device.” Here, however, Marks describes a host logical unit (LUN) where the data comprising the LUN is distributed across more than one storage device. This is not analogous to Applicant’s virtualization database since Marks refers only to distributing the data (not “objects defining a mapping from the at least one virtual volume to data”) across multiple storage devices (not across “more than one processor”). Bishop does not make up for this deficiency of Marks, since Bishop also does not disclose or suggest, “at least one virtual volume comprising objects defining a mapping from the at least one virtual volume to data in the at least one storage device, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database.”

Third, Marks does not disclose or suggest, “storing information about a state of the at least one storage device in the virtualization database.” As demonstrated above, Marks does not disclose or suggest “the virtualization database” of Applicant’s claim 1, and therefore cannot disclose or suggest storing information in it, let alone “information about a state of the at least one storage device.”

In the Office Action, Marks at col. 7, lines 14-18, 28-30 and col. 10, lines 58-61 is cited as disclosing “storing information about a state of the at least one storage device....” See Office Action at 4. Here, however, Marks discloses only the initialization of devices and the testing of their readiness upon initialization. While Marks discloses sending a test signal to initialize a device, nowhere does Marks disclose or suggest that any state information gleaned from sending the test signal should be stored in any virtualization database. Additionally, although Bishop

discloses an “error monitor,” Bishop does not make up for this deficiency of Marks since Bishop also does not disclose or suggest, “storing information about a state of the at least one storage device in the virtualization database.”

In summary, Applicants respectfully submit that claim 1 is not rendered obvious by Marks in view of Bishop at least since neither reference, alone or in combination, discloses or suggests:

- “halting long term operations underway at the time the quiescence instruction is received; and completing short term operations comprising operations that are other than long term operations,”
- “at least one virtual volume comprising objects defining a mapping from the at least one virtual volume to data in the at least one storage device, wherein the objects are distributed across more than one processor in the virtualization layer and comprise a virtualization database,” or
- “storing information about a state of the at least one storage device in the virtualization database.”

Claim 9

Claim 9 is a system claim reciting similar elements to method claim 1. Accordingly, it is respectfully submitted that claim 9 is not rendered obvious by Marks in view of Bishop in view of the arguments above with respect to claim 1.

Applicant submits that the rejection of claims 1 and 9 under 35 U.S.C. § 103 should be withdrawn for the reasons stated above. The rejections of claims 2-8 and 10-12 under 35 U.S.C. § 103 should also be withdrawn for at least the same reasons since they depend from claims 1 and 9.

Rejections Under 35 U.S.C. § 102

The Office Action rejected claims 14-25 under 35 U.S.C. § 102(b) as being anticipated by Marks. See Office Action at 8. This rejection should be withdrawn because independent claims 14 and 20 patentably distinguish over Marks. To properly establish that Marks anticipates Applicant's claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Marks, however, does not disclose each and every element of independent claims 14 and 20.

As shown in the argument above with respect to claim 1, Marks does not disclose or suggest, “at least one virtual volume comprising **objects defining a mapping** from the at least one virtual volume to data in the at least one storage device, wherein **the objects are distributed across more than one processor** in the virtualization layer and comprise a virtualization database,” and “storing information about a state of the at least one storage device in the virtualization database.” Since Marks does not disclose these elements of Applicant's claim 14, the rejection under 35 U.S.C. § 102 should be withdrawn.

Claim 20 is a computer-readable medium claim reciting similar elements to system claim 14. Accordingly, it is respectfully submitted that claim 20 is patentably distinct from Marks, and the rejection of claims 14 and 20 under 35 U.S.C. § 102 should be withdrawn. The rejections of claims 16-19 and 21-25 under

35 U.S.C. § 102 should also be withdrawn for at least the same reasons since they depend from claims 14 and 20.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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